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and vertical curves are dependent upon the estimated speed of traffic.

Automobile roads in the USSR are divided into five technical classes, according to their technical and economic criteria, as shown in Table 2.

Technical classification of newly-constructed or repaired roads is made by an organization, which assigns the experiments, or approves the project, and classifies the road as to state classification. Departmental roads, which are public roads, are classified in a certain technical class in accordance with road organizations, not lower than the oblast scale. In selecting the technical class of a road, it is necessary to study the economic criteria (rate of traffic).

A road may be built or reconstructed along its entire length under one technical classification; on the other hand, various sections may be built under different technical classifications, depending upon the topography of the district, the technical and economical criteria and the conditions of its use.

The speeds indicated in Table 2 are estimated for determining the corresponding widths of shoulder, traffic lane, and roadbed under normal conditions. In certain, especially difficult sections in mountainous districts, and within populated areas, estimated speeds may be lowered with the permission of the authority approving the project. The same authority establishes the minimum length of these sections.

When slides are possible, or when broken-down cars are parked along the road, or when laying the ground foundation (roadbed) is difficult, the widths indicated in Table 2 (in mountainous or populated areas), and the widths of shoulders for Class I or II roads, may be lowered to one meter. For Class II, to V roads up to 0.5 meter, the corresponding minimum width of the roadbed, may be: Class I roads, 14 meters, or 2x9 meters; Class II, 9 meters; Class III, 7 meters; Class IV, 6.5 meters; and Class V, 5.5 meters. The type of surface for each class of road is determined on the basis of stress and speed of traffic.

B. Administration

The administration of automobile roads of Union importance is carried out by the Main Administration of Surfaced Roads (Gushosdor) of the Ministry of Internal Affairs USSR. Other roads are managed by the various responsible authorities, the main road administrations in the Soviets of Ministers of the Union Republics with the exception of state roads belonging to specific enterprises and farms.

The system of administration and operation of the security and inspection service for repair and upkeep of roads is shown in Table 3.

The lengths and categories of road sections (DU) on the roads of the Gushosdor system are determined by estimating the volume of traffic on the roads and the types of surfaces (Table 4).

In especially important sections (approaches to large cities, mountainous areas, surface widths over 6 meters, etc.) the length of the section is shortened but not by more than 25 percent, at the same time its category is raised.

The length of road stretches is also dependent on the type of surface and rate of traffic (Table 5).

In road widths over 7 meters in mountainous districts, in approaches to large cities, etc., the length of the distance is diminished, but not by more than 25 percent. Bridge stretches are determined in bridge lengths over 500 meters.

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The length of maintenance strips (by-passes) on improved roads is 3-4 km. on stone surface roads 4-5 km, and on ground surface roads 5-8 km.

At present the organizational breakdown within the Gushosdor operates as follows:

Building control -- for each independent objective.

Building regions -- for 30-70 km of road, depending upon the size and complexity of the work.

Stretch -- 10-20 km of road, depending upon the size and type of the work.

Foreman's selections -- 10-15 km of road, or separate, large, artificial constructions.

Table 1. State Classification of Roads

State Roads (Roads of Union importance)

1. Roads joining centers of Union republics or especially large industrial and cultural centers of the USSR
2. Roads, joining economic regions of Union importance, or their administrative centers, between which there is a heavy freight or passenger traffic for controlling a given territory or for further development of a network.
3. Basic network of roads important to defense.
4. Roads joining resorts of Union importance, and connecting them with railroad stations and piers.
5. Roads serving international trade exchange and passenger traffic, and connecting large centers of the USSR with large centers of neighboring states.

Republic Roads

1. Roads connecting main administrative, cultural, economic, and political centers of autonomous republics, kray, and oblast with the centers of a Union republic and with each other.
2. Roads serving freight and passenger traffic between points, located in different autonomous republics, kray, and oblast, and because of their character and heavy traffic having special economic importance for the Union republic.
3. Roads connecting centers of extracting and processing industry, and connecting resorts of importance to the entire Union republic with the nearest railroad stations and piers.

Oblast Roads (Includes kray, autonomous republic, etc.)

1. Roads connecting rayon centers with the center of their own autonomous republic, kray, or oblast.

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2. Roads serving traffic between points in different rayons, and which, because of their character and heavy traffic, have special economic importance for the autonomous republic, rayon, or oblast.

3. Roads connecting centers of extracting and processing industry, base storage points, resorts, sanatoriums which are important to the whole autonomous republic, kray, or oblast with the nearest railroad stations and piers.

Rayon Roads

1. Roads connecting rayon centers with each other and with village soviets.

2. Roads, having a special economic significance for the rayon because of their nature and heavy traffic.

3. Roads connecting machine-tractor stations, machine-maintenance points, and storage points with rayon centers, railroad stations, and piers.

Village Roads

Roads connecting villages, sovkhoz, and kolkhoz with each other and with village soviets and machine-tractor stations and machine-maintenance points with interior storage points.

Departmental Roads

1. Roads of interior economy, passing through the territory allotted to an enterprise (plant, sovkhoz, storing point, oil base, etc.)

2. Roads connecting enterprises with the general network of roads and primarily serving the needs of the enterprise.

Table 2. Technical Classification of Roads (Planned)

Technical and Economical Criteria	Technical Classification				
	I	II	III	IV	V
Estimated speed, (km/hr)	120	100	80	60	40
Width of the shoulder, (m)	3	2.5	2.5	2.5	2.0
Width of the traffic lane, (m)	2x7	7	6	5.5	4.5
Width of ground foundation (roadbed) (m)	2x13 or not less than 23 m	12	11	10	8.5
Estimated Loading of Artificial Structures:					
a Metal, reinforced concrete, and stone	N-13 and N-60	N-13 and N-60	N-10 and N-60	N-10 and N-60	N-10 and N-60
b Wooden			N-8 and N-30	N-8 and N-30	N-8 and N-30
Bridge Clearances					
a Normal	2x G-7	G-7	G-6	G-6	*
b Widened	*	UG-10	UG-9	UG-8	*

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* Not standardized according to the given classification

Technical Standards	Technical Classification				
	I	II	III	IV	V
1. Radii of Curves in Horizontal Planes (in m).					
a. Recommended	2,400	1,600	1,000	500	20
b. Basic estimate	1,600	800	400	180	45
c. Minimum	500	300	200	80	25
2. Longitudinal Grade (in %)					
a. Maximum	3	4	5	6	7.5
b. Exceptional	4	5	6	7.5	9
c. Same for train traffic	4	4	5	6	6
3. Visibility Range (in m)					
a. On a plane	160	150	90	50	30
b. In profile	160	75	45	25	15
4. Radii of Vertical Curves (in m)					
a. Concave not less than	2,500	1,000	600	250	60
b. Convex within the range from	2,500	1,000	600	250	60
to	10,000	2,500	1,000		

Table 3. Organization of Road Administration

Roads of Union Importance	Roads of Republic, Oblast, and Rayon Importance
I. Main Administration of Surfaced Roads of Ministry of Internal Affairs USSR	I. Main Road Administrations Glavdorupry of Soviet of Ministers of Union Republics
IIa. Administrations and sections of hard surface roads (Ushoesdor and Oshoesdor), of the Ministries of Internal Affairs of the Union and Autonomous Republics, and administrations of these ministries in kray and oblast.	IIa. Road administrations of the Soviets of Ministers of Autonomous Republics
IIb. Administrations of separate roads (Uproder)	IIb. Road sections of oblast and kray executive committees
III. Road sectors	IIIa. Road sections
	IIIb. Rayon and village roads
IV. Stretches of road and bridge firemen	IV. Stretches of road and bridge foremen
V. Maintenance tours, ferry crossings, bridges	V. Maintenance tours, ferry crossings, bridges

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Table 4. Categories of Road Sectors

Category	Vol of Traffic Units (24 Hrs)	Types of Road Surfaces	Lengths of Road Sectors (km)
I	(a) Over 500	Not less than 80% of roads with stone surface	100-200
	(b) Less than 500	More than 50% of roads with finished surface	
II	(a) From 300 to 500	Regardless of type of surface	150-250
	(b) Less than 300	Not less than 60% with stone surface	
III	Less than 300	Mainly ground	180-300

Table 5. Length of Stretch

Type of Surface	Vol of Traffic Units (24 Hrs)	Length of Stretch (km)
Stone and finished, with 7 m-width	Over 500	20
	300-500	25
	Up to 300	30
Ground, regardless of width of surface	Over 150	35
	Up to 150	40

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